US009133831B2

(12) **United States Patent**
Wang

(10) **Patent No.: US 9,133,831 B2**
(45) **Date of Patent: Sep. 15, 2015**

(54) **FOLDABLE HANDLE FOR HAND PUMP**

(71) Applicant: **Lo Pin Wang**, Taichung (TW)

(72) Inventor: **Lo Pin Wang**, Taichung (TW)

(73) Assignee: **Beto Entineering & Marketing Co., Ltd.**, Beitun, Taichung (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 399 days.

(21) Appl. No.: **13/633,902**

(22) Filed: **Oct. 3, 2012**

(65) **Prior Publication Data**

US 2014/0090553 A1 Apr. 3, 2014

(51) **Int. Cl.**
F04B 9/14 (2006.01)
F04B 33/00 (2006.01)

(52) **U.S. Cl.**
CPC .. ***F04B 9/14*** (2013.01); ***F04B 33/00*** (2013.01)

(58) **Field of Classification Search**
CPC F04B 33/00; F04B 33/005; F04B 39/12; F04B 9/14; F15B 15/061; F15B 15/144
USPC 141/95; 16/438, 900; 280/288.4; 417/234, 313, 512, 544; 92/15, 58.1; 74/145, 146, 543, 547
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

785,154	A *	3/1905	Cordeau	92/15
2,677,975	A *	5/1954	Russell	74/547
2,790,597	A *	4/1957	Turpin	417/566
4,673,007	A *	6/1987	Huang	141/95
5,494,411	A	2/1996	Chuang	
5,947,706	A	9/1999	Gapinski	
6,464,477	B1	10/2002	Wu	
6,485,264	B1	11/2002	Wu	
6,558,129	B2	5/2003	Wang	
7,331,768	B2	2/2008	Wu	
7,337,933	B1 *	3/2008	Klinberg	223/118

FOREIGN PATENT DOCUMENTS

GB	159456	*	3/1921	F04B 33/005
TW	200938726 A	*	9/2009	F04B 33/00
WO	WO 2012063959	*	5/2012	F04B 33/00

OTHER PUBLICATIONS

File Name: TW200938726A_Derwent.pdf. Zhuang, S. , Foldable ground standing type air pump—in which all components can be folded or stored for saving space, and the handle, the piston rod, and the air pipe are constrained. Thomason Reuters, Derwent Acc-No. 2010-B96067. Abstract of TW 200938726. pp. 1-3. Publication year: 2009.*

File Name: TW_200938726_MachineTranslate.pdf. Zhuang, S. Landmark folding type pump. Google Translate of TW 200938726. pp. 1-23. Publication year: 2009.*

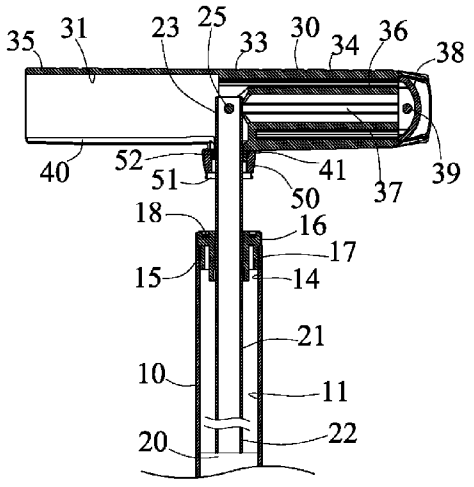
* cited by examiner

Primary Examiner — Nathaniel Wiehe
Assistant Examiner — Qi Gan
(74) *Attorney, Agent, or Firm* — Charles E. Baxley

(57) **ABSTRACT**

A hand pump includes a piston slidably engaged in a housing and coupled to a piston rod, a handle having a compartment for receiving the piston rod at an inwardly folding position and having a guiding passage formed in one of the two end portions of the handle, a stud extended from a middle portion of the handle and having a slot communicating with the passage of the handle for allowing the piston rod to be rotated relative to handle between the inwardly folding position and an outwardly working position where the piston rod is engaged in the stud and perpendicular to the handle, and a control ferrule is attached onto the piston rod for anchoring the piston rod to the housing at the outwardly working position.

8 Claims, 11 Drawing Sheets



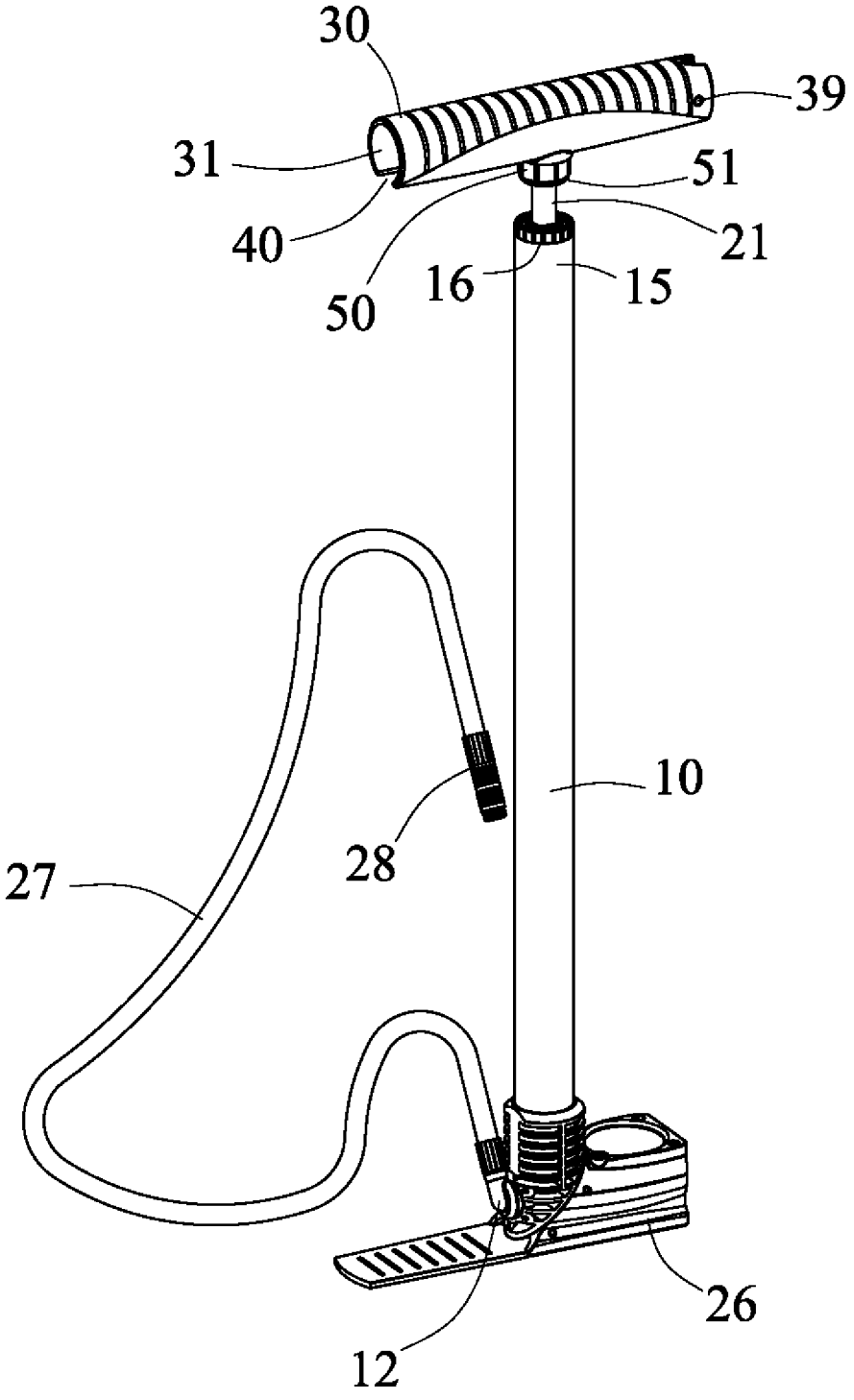


FIG. 1

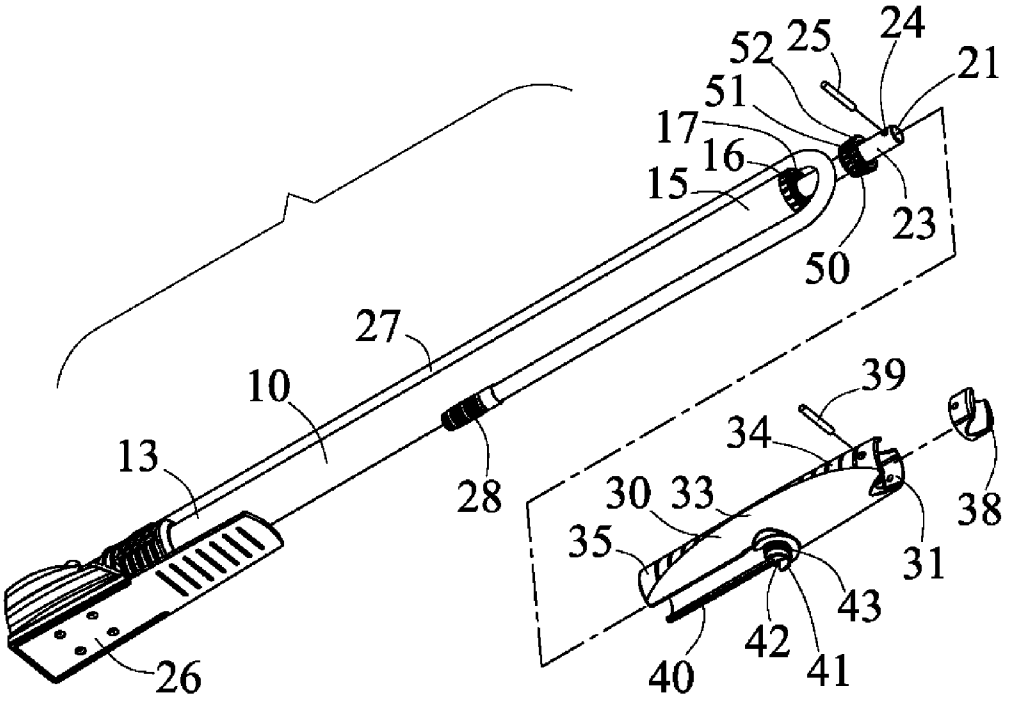

52
25
24
21
51
17
16
15
23
50
27
10
39
34
13
28
30
33
38
35
31
43
42
41
40
26

FIG. 2

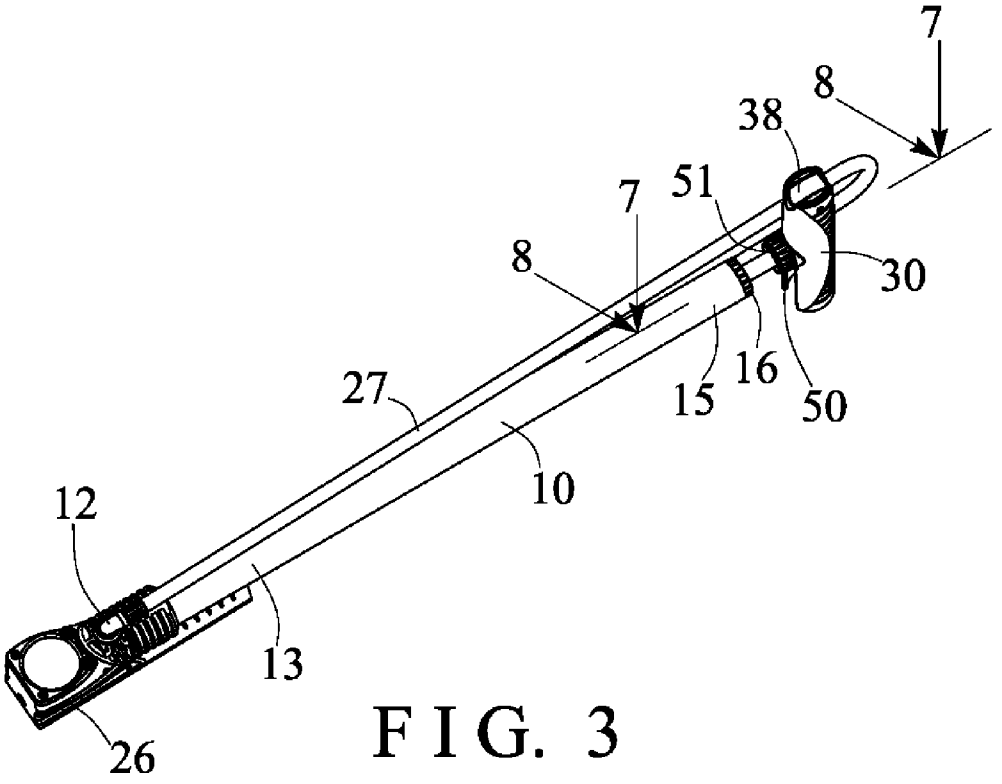

7
8
38
7
51
8
30
27
16
15
50
10
12
13
26

FIG. 3

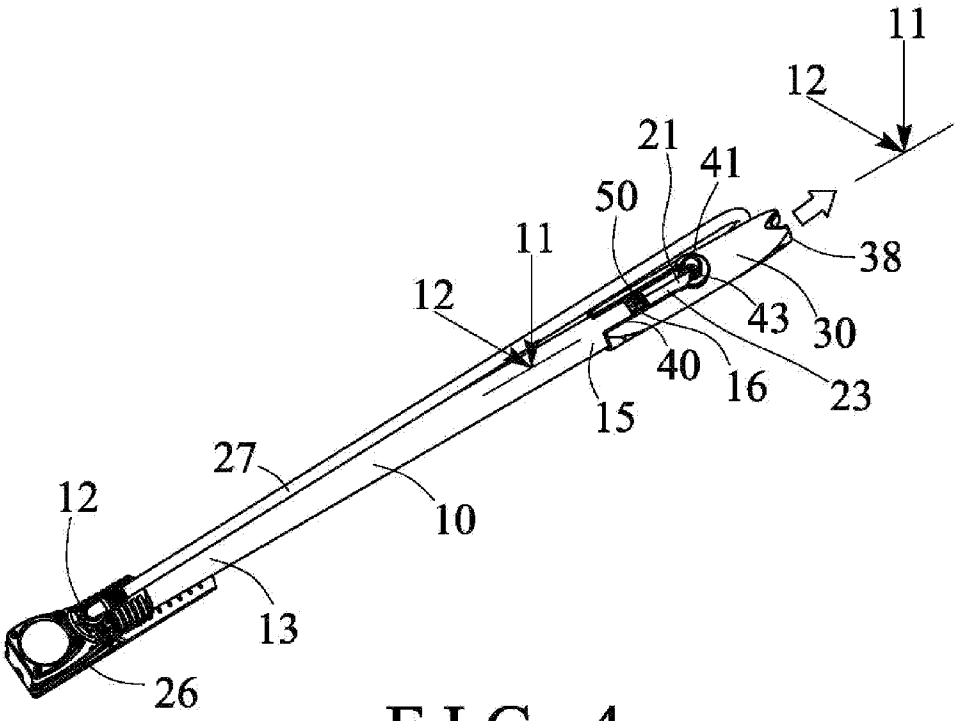

11
12
21
41
50
38
11
12
43
30
40
16
23
15
27
12
10
13
26

FIG. 4

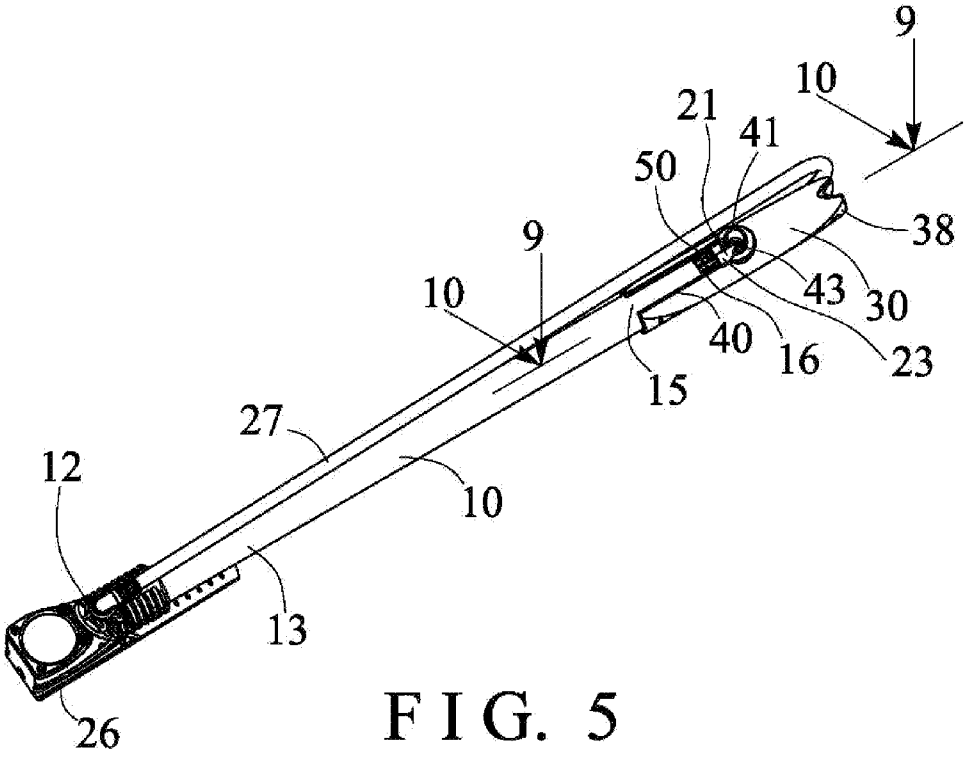

9
10
21
41
50
38
9
10
43
30
40
16
23
15
27
12
10
13
26

FIG. 5

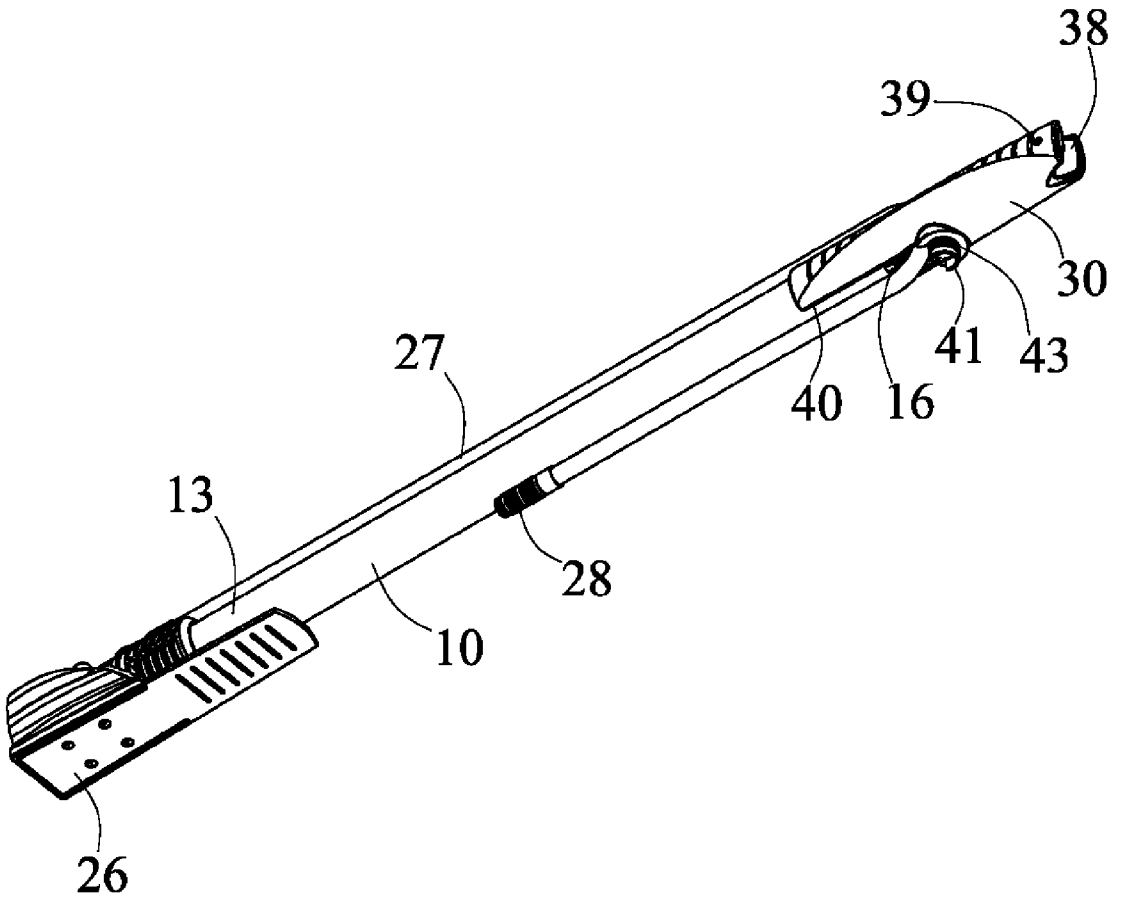


FIG. 6

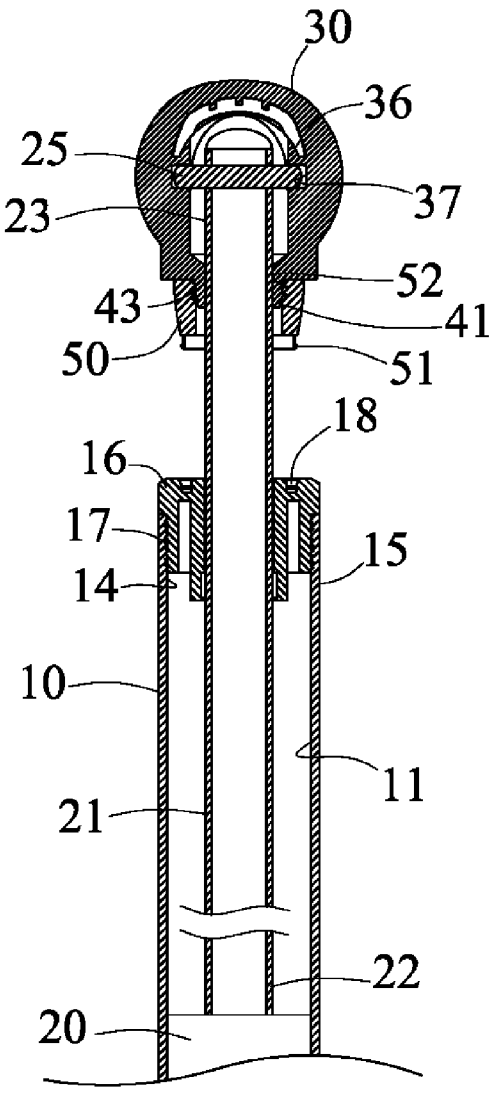

30
36
25
37
23
52
43
41
50
51
18
16
17
15
14
10
11
21
22
20

FIG. 7

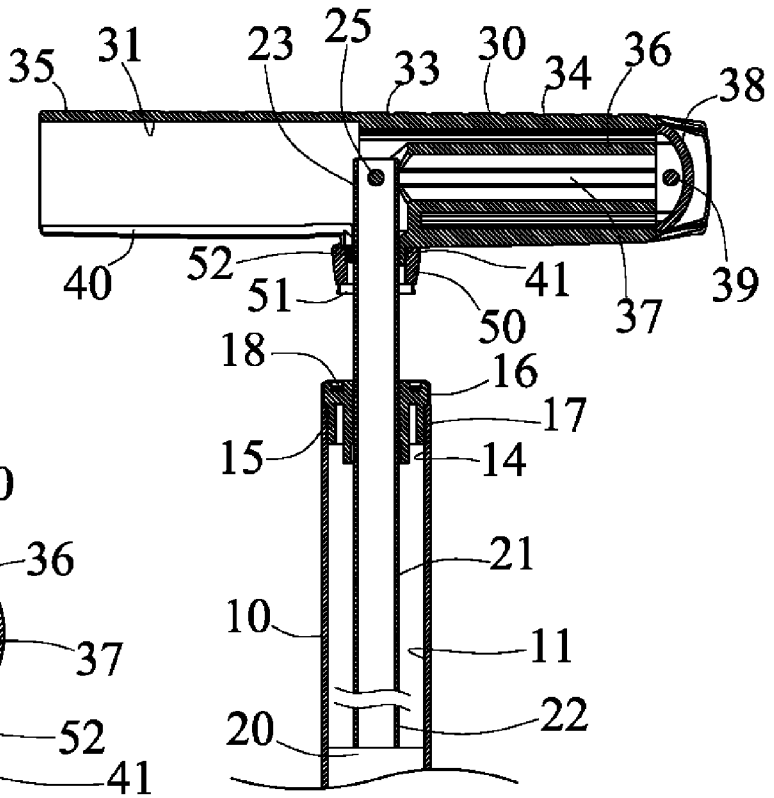

35
31
23
25
33
30
34
36
38
40
52
51
41
50
37
39
18
16
17
15
14
21
10
11
20
22

FIG. 8

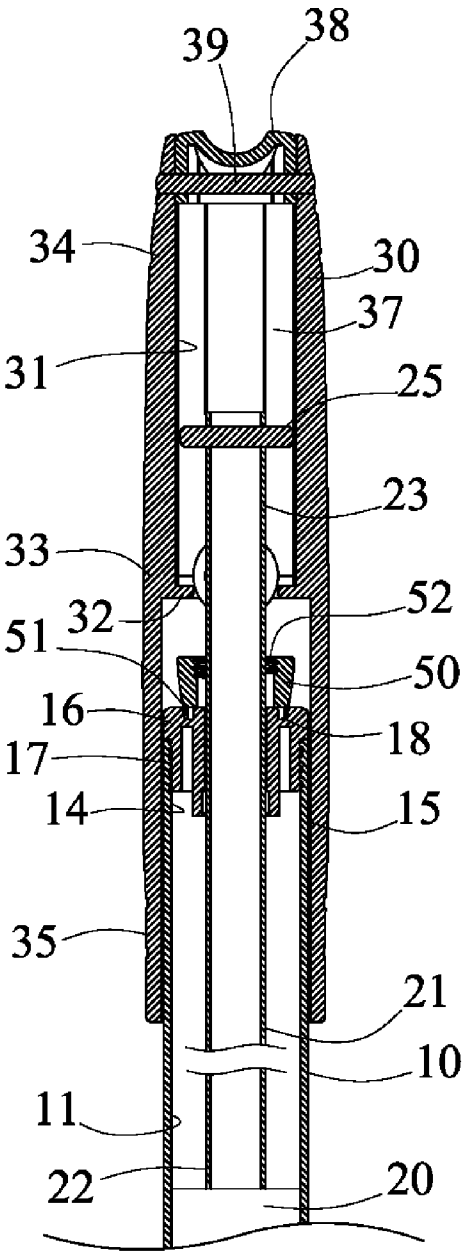

39
38
34
30
37
31
25
23
33
52
32
51
50
16
18
17
14
15
35
21
10
11
22
20

FIG. 9

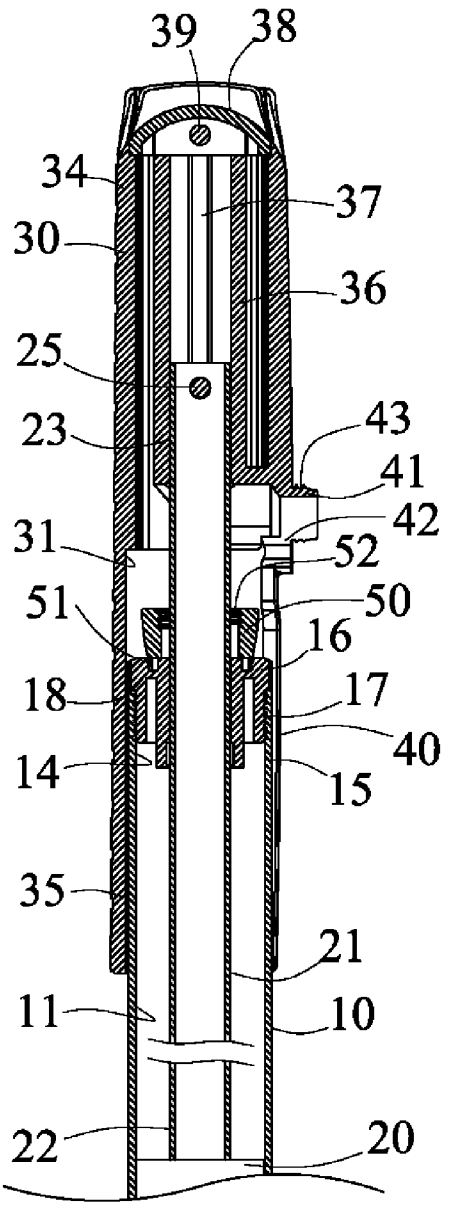

39
38
34
37
30
36
25
43
23
41
42
31
52
51
50
16
18
17
40
14
15
35
21
11
10
22
20

FIG. 10

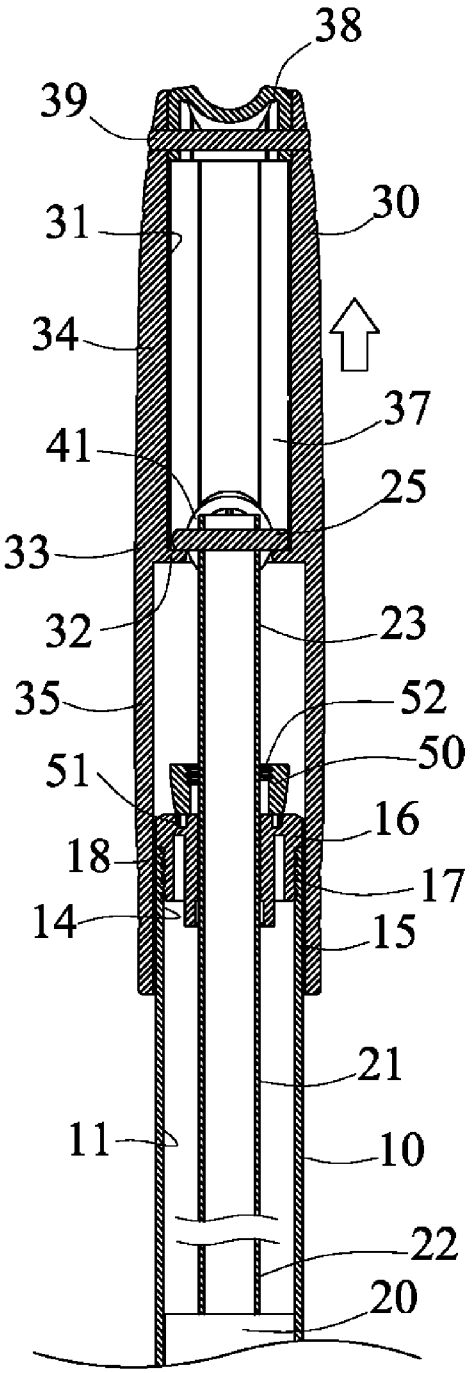

38
39
30
31
34
37
41
25
33
32
23
35
52
51
50
16
18
17
14
15
21
11
10
22
20

FIG. 11

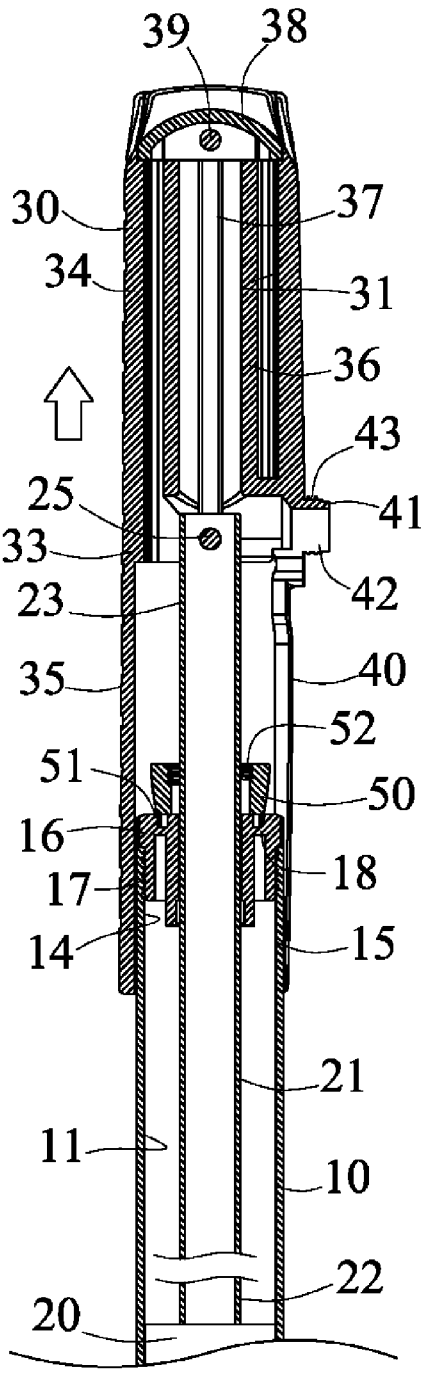

39
38
30
37
34
31
36
43
25
41
33
42
23
35
40
52
51
50
16
18
17
14
15
21
11
10
22
20

FIG. 12

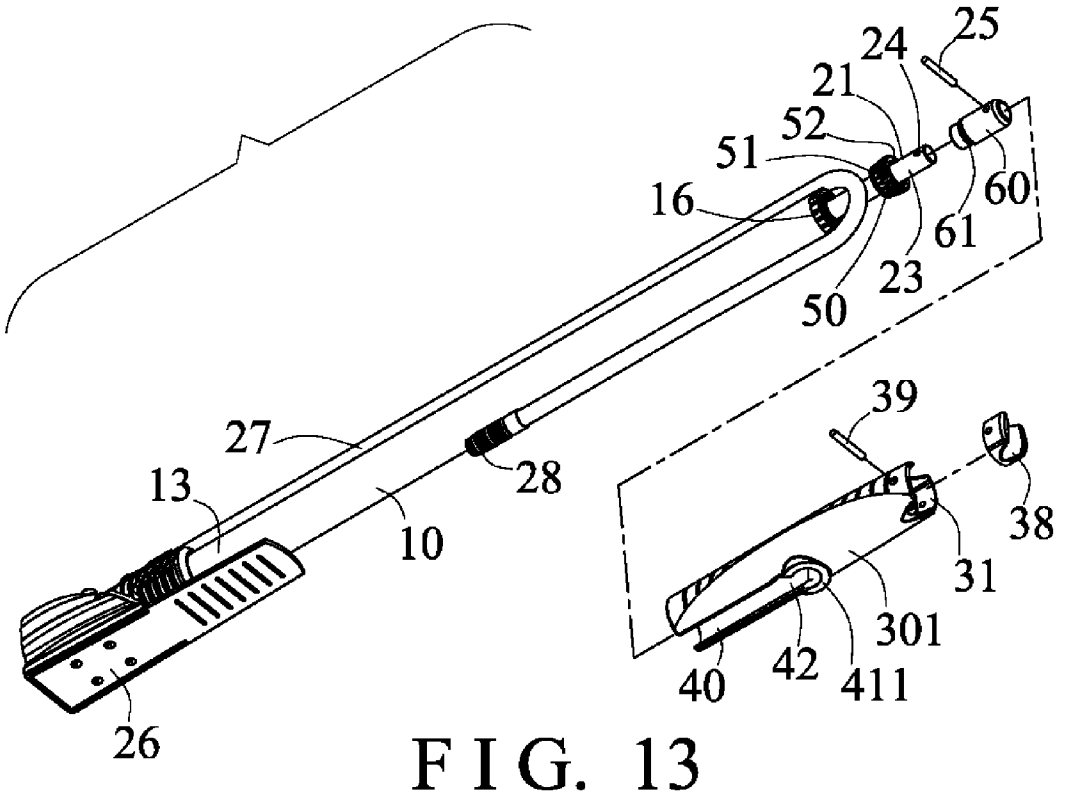

25
24
21
52
51
16
60
61
23
50
39
27
28
13
10
38
31
301
40
42
411
26

FIG. 13

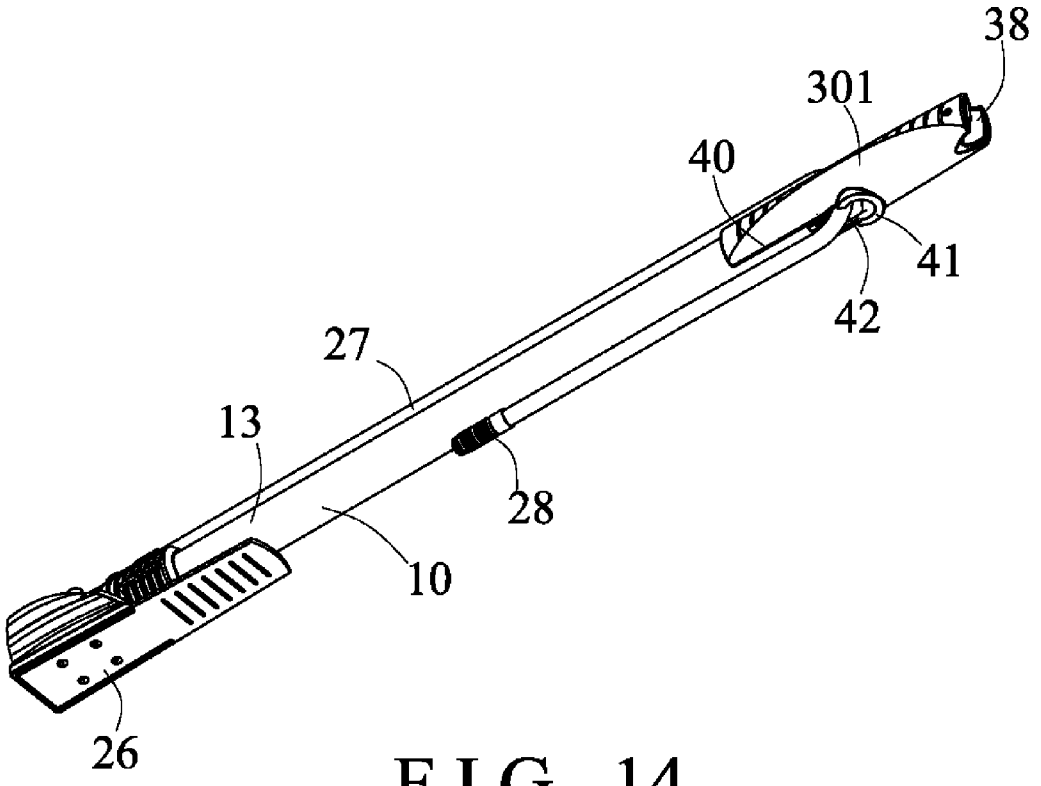

38
301
40
41
42
27
13
28
10
26

FIG. 14

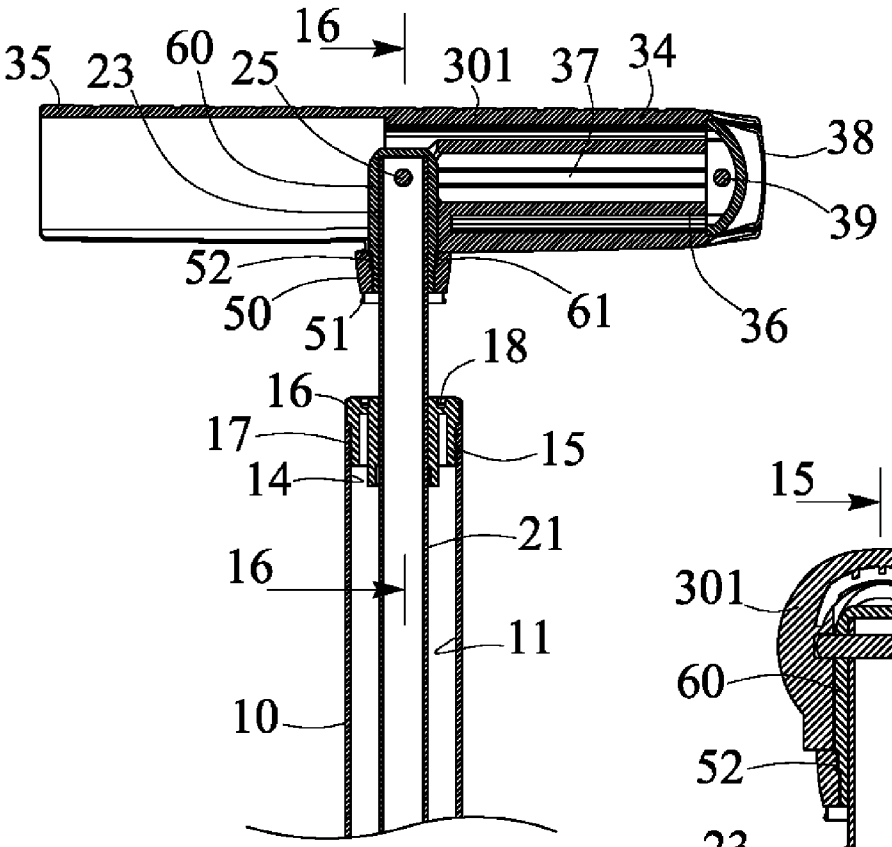

16
35
23
60
25
301
37
34
38
39
52
50
51
61
36
18
16
17
15
14
21
16
11
10

FIG. 15

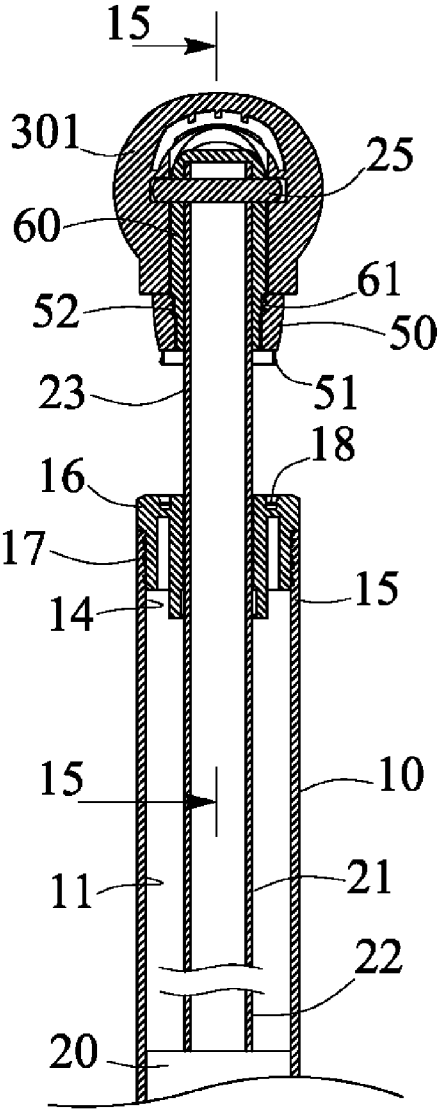

15
301
25
60
61
52
50
23
51
18
16
17
15
14
15
10
11
21
22
20

FIG. 16

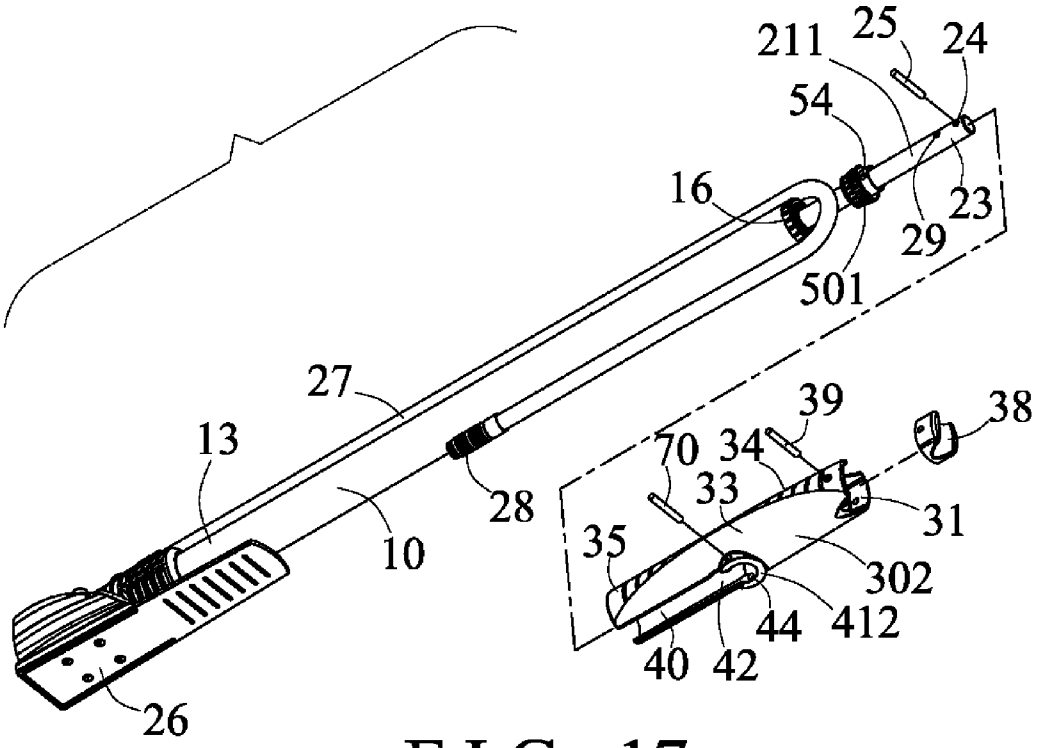

211
25
24
54
16
23
29
501
27
39
38
13
70
34
28
33
31
35
10
302
44
412
40
42
26

FIG. 17

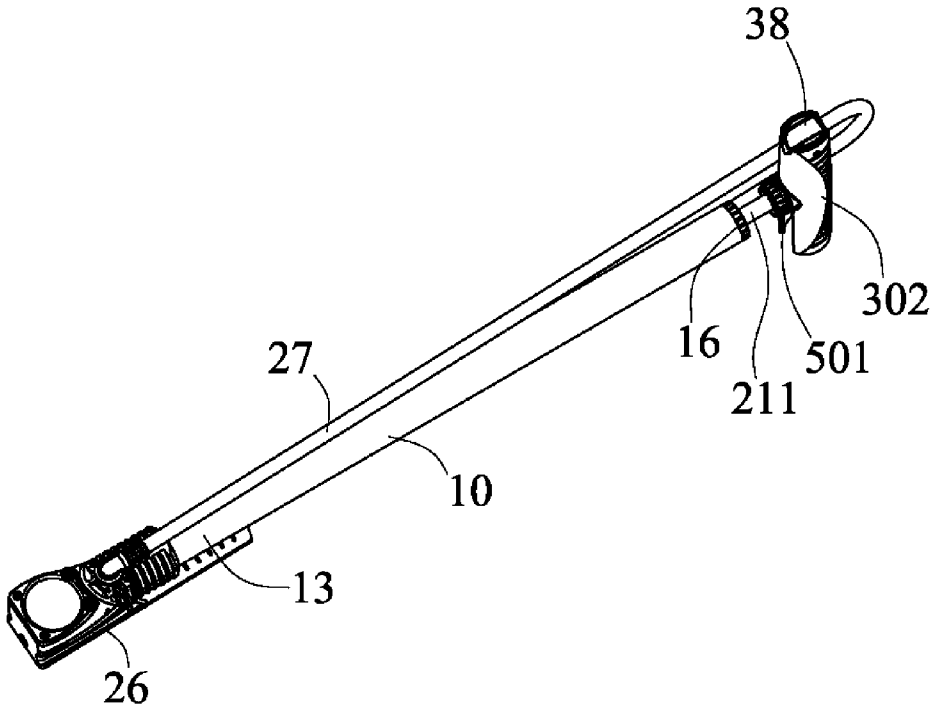

38
302
16
501
27
211
10
13
26

FIG. 18

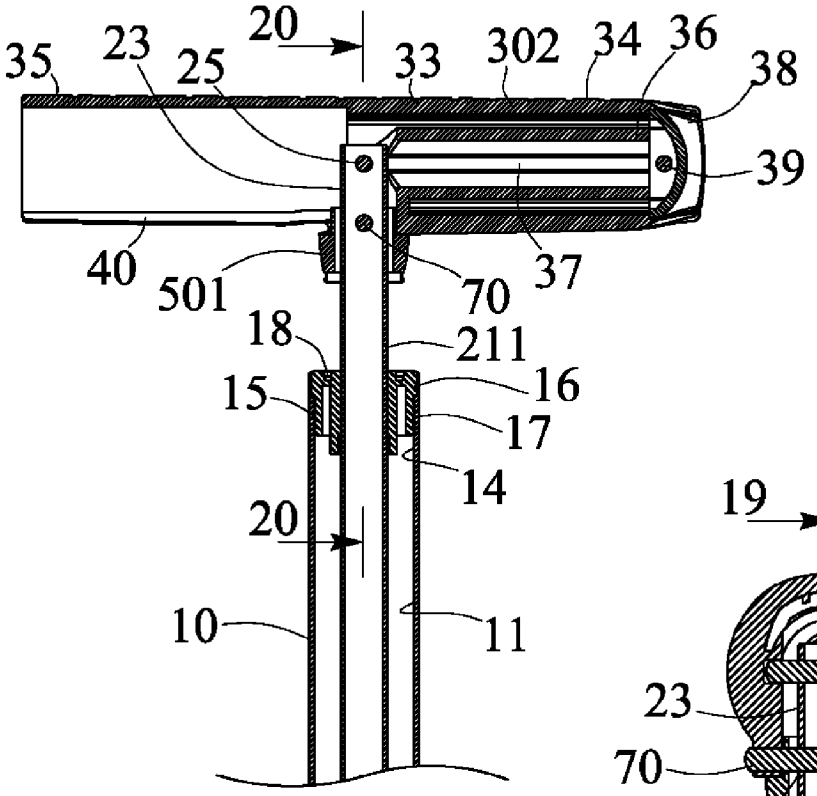

20
35
23
25
33
302
34
36
38
39
40
501
70
37
18
211
15
16
17
14
20
10
11

FIG. 19

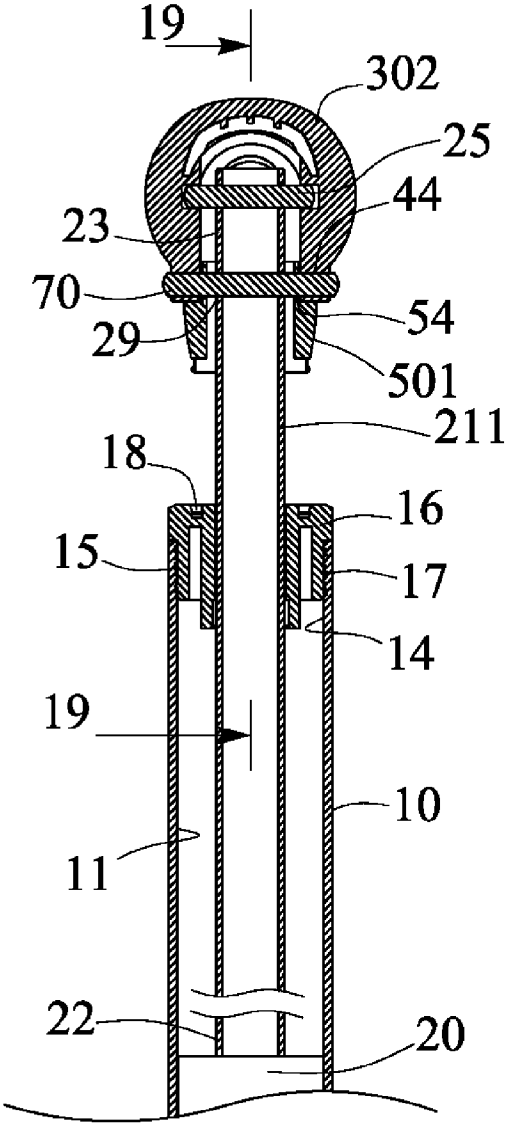

19
302
25
44
23
70
54
29
501
211
18
16
15
17
14
19
10
11
22
20

FIG. 20

FOLDABLE HANDLE FOR HAND PUMP

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a hand pump or air pump, and more particularly to a hand pump or air pump including a handle foldable or collapsible between a compact folding structure and an opened working structure and arranged for allowing the handle to be solidly and stably and effectively actuated or operated by the user while in the opened working structure.

2. Description of the Prior Art

Typical hand pumps or air pumps comprise a tubular or cylindrical housing including a stand, such as a foldable or collapsible stand attached or mounted or secured to the bottom portion thereof for supporting the tubular or cylindrical housing in or at an upright status, and a handle, such as a foldable or collapsible handle attached or mounted or secured to the upper portion thereof for actuating or operating the piston to move in a reciprocating action within the tubular or cylindrical housing in order to pump and to generate the pressurized air and to supply the pressurized air out of the tubular or cylindrical housing.

For example, U.S. Pat. No. 6,485,264 to Wu, and U.S. Pat. No. 7,331,768 to Wu disclose two of the typical hand pumps or air pumps each comprising a tubular or cylindrical housing including a bottom stand and an upper handle.

However, the stand and the handle may not be folded relative to the tubular or cylindrical housing such that the typical hand pumps or air pumps may occupy a great size or volume or dimension that is no good and adverse for storing and transportation purposes.

U.S. Pat. No. 5,947,706 to Gapinski discloses another typical hand pump or air pump comprising a tubular or cylindrical housing including a foldable or collapsible stand attached or mounted or secured to the bottom portion thereof.

However, the handle also may not be folded relative to the tubular or cylindrical housing such that the typical hand pumps or air pumps may occupy a great size or volume or dimension that is no good and adverse for storing and transportation purposes.

U.S. Pat. No. 5,494,411 to Chuang, U.S. Pat. No. 6,464,477 to Wu, and U.S. Pat. No. 6,558,129 to Wang disclose several further typical hand pumps or air pumps each comprising a tubular or cylindrical housing including a foldable or collapsible handle attached or mounted or secured to the upper portion thereof for actuating or operating the piston to move in a reciprocating action within the tubular or cylindrical housing.

However, the foldable or collapsible handle is off center and unbalanced while in the opened working structure; i.e., the handle is located at one side of a supporting pivot shaft or axle, such that the user may not forcefully and effectively and suitably apply the force to actuate or operate the piston with the foldable or collapsible handle of the typical hand pumps or air pumps, and such that the typical hand pumps or air pumps may not be forcefully and effectively actuated or operated by the user.

The present invention has arisen to mitigate and/or obviate the afore-described disadvantages of the conventional hand pumps or air pumps.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a hand pump or air pump including a handle foldable or collapsible between a compact folding structure and an opened working structure and arranged for allowing the handle to be solidly and stably and effectively actuated or operated by the user while in the opened working structure.

In accordance with one aspect of the invention, there is provided a hand pump comprising a housing including a chamber formed therein, and including an outlet provided therein, a piston slidably received and engaged in the chamber of the housing and movable along the chamber of the housing in a reciprocating action in order to pump and generate a pressurized air and to supply the pressurized air out through the outlet of the housing, a piston rod including an inner end portion attached to the piston for actuating the piston to move along the chamber of the housing in the reciprocating action, and including an outer end portion extendible out of the housing, a handle including a compartment formed therein for slidably receiving and engaging with the outer end portion of the piston rod at an inwardly folding position, and including a middle portion and a first end portion and a second end portion, and including a guiding passage formed in the second end portion of the handle, and including a stud extended from the middle portion of the handle and perpendicular to the handle and having a slot formed in the stud and communicating with the passage of the handle for selectively receiving and engaging with the piston rod and for allowing the piston rod to be rotated relative to handle between the inwardly folding position where the piston rod is received and engaged in the second end portion of the handle and an outwardly working position where the piston rod is engaged in the stud and perpendicular to the handle, and a control ferrule slidably attached onto the piston rod for selectively engaging with the stud of the handle and for selectively anchoring and securing the piston rod to the stud and the housing at the outwardly working position.

The handle includes an engaging member formed and provided on the stud, and the control ferrule includes an engaging member for selectively engaging with the engaging member of the stud and for selectively anchoring and securing the control ferrule to the stud of the handle. The engaging member of the stud is selected from an outer thread, and the engaging member of the control ferrule is selected from an inner thread.

The control ferrule includes a threaded segment for selectively attaching to the housing. The housing includes a cap attached to the housing for slidably receiving and engaging with the piston rod, and includes an engaging member formed and provided on the cap for selectively engaging with the threaded segment of the control ferrule.

The handle includes an anchoring member extended into the compartment from the middle portion of the handle for selectively engaging with the shaft and for guiding and limiting the piston rod to slide relative to the housing and for preventing the shaft from being disengaged from the handle.

The anchoring member of the handle is selected from an inner peripheral flange which is radially and inwardly extended into the compartment from the middle portion of the handle. The handle includes a cover attached to the first end portion of the handle for blocking the first end portion of the handle and for anchoring and confining the shaft in the first end portion of the handle and for preventing the shaft from being disengaged from the handle.

The handle includes a barrel formed and provided in the first end portion of the handle for slidably receiving and engaging with the shaft. The handle includes a guiding channel formed and provided in the barrel for slidably receiving

and engaging with the shaft and for guiding and limiting the shaft to slide and move in the barrel and in the first end portion of the handle.

Further objectives and advantages of the present invention will become apparent from a careful reading of the detailed description provided hereinbelow, with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a hand pump or air pump in accordance with the present invention, in an opened working structure or status or position;

FIG. **2** is a partial exploded view of the hand pump or air pump;

FIGS. **3**, **4**, **5**, **6** are other perspective views similar to FIG. **1**, illustrating the folding or collapsing operation of the hand pump or air pump;

FIGS. **7**, **8** are partial cross sectional views of the hand pump or air pump, taken along lines **7-7** and **8-8** of FIG. **3** respectively;

FIGS. **9**, **10** are partial cross sectional views of the hand pump or air pump, taken along lines **9-9** and **10-10** of FIG. **5** respectively;

FIGS. **11**, **12** are partial cross sectional views of the hand pump or air pump, taken along lines **11-11** and **12-12** of FIG. **4** respectively;

FIG. **13** is another partial exploded view similar to FIG. **2**, illustrating the other arrangement of the hand pump or air pump;

FIG. **14** is a perspective view of the hand pump or air pump as shown in FIG. **13**;

FIG. **15** is another partial cross sectional view of the hand pump or air pump as shown in FIGS. **13-14**, taken along lines **15-15** of FIG. **16**;

FIG. **16** is a further partial cross sectional view of the hand pump or air pump as shown in FIGS. **13-14**, taken along lines **16-16** of FIG. **15**;

FIG. **17** is a further partial exploded view similar to FIGS. **2** and **13**, illustrating the further arrangement of the hand pump or air pump;

FIG. **18** is a perspective view of the hand pump or air pump as shown in FIG. **17**;

FIG. **19** is another partial cross sectional view of the hand pump or air pump as shown in FIGS. **17-18**, taken along lines **19-19** of FIG. **20**;

FIG. **20** is a further partial cross sectional view of the hand pump or air pump as shown in FIGS. **17-18**, taken along lines **20-20** of FIG. **19**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, and initially to FIGS. **1-12**, a hand pump or air pump in accordance with the present invention comprises a tubular or cylindrical housing **10** including a chamber **11** formed therein (FIGS. **7-12**) for slidably receiving or engaging with a piston **20** (FIGS. **9-12**), and including an exit or outlet **12** formed or provided in the lower portion **13** thereof (FIGS. **1** and **3-5**) for air outwardly flowing or discharging purposes, and including an opening **14** formed or provided in the upper portion **15** thereof (FIGS. **7-12**), and including a lid or cap **16** attached or mounted or secured or engaged into the opening **14** at the upper portion **15** of the housing **10** and secured to the housing **10** with a latch or fastener or threading engagement **17**, and the cap **16** includes an adaptor or engaging member **18**, such as an inner thread **18** formed or provided therein.

A piston rod **21** includes a first or inner end portion **22** attached or mounted or secured to the piston **20** for actuating or operating the piston **20** to move along the chamber **11** of the housing **10** in a reciprocating action in order to pump and to generate the pressurized air and to supply the pressurized air out through the outlet **12** of the housing **10**, and includes a second or outer end portion **23** slidably engaged through the cap **16** and extendible out of the upper portion **15** of the housing **10**, and includes a hole **24** formed in the second or outer end portion **23** of the piston rod **21** for receiving or engaging with or attaching or mounting or securing a pin or shaft **25** therein, in which the shaft **25** is disposed or arranged and tilted or inclined or perpendicular to the piston rod **21** and extended out of the piston rod **21**.

A foot stand **26**, such as a foldable or collapsible foot stand **26** is attached or mounted or secured to the bottom or lower portion **13** of the housing **10** for supporting the housing **10** in or at an upright status or working position (FIG. **1**), and the foot stand **26** is foldable or collapsible toward and to engage with the housing **10** in or at a compact folding structure or status or position (FIGS. **2-6**). A hose **27** is attached or mounted or secured or coupled to the outlet **12** of the housing **10** for receiving the pressurized air from the housing **10**, and a tap or mouth or nozzle **28** is attached or mounted or secured or coupled to the hose **27** for engaging with various kinds of air inflatable facilities or devices (not shown) and for filling or supplying the pressurized air to inflate the inflatable facilities or devices. The foot stand **26** and the hose **27** and the nozzle **28** are not related to the present invention and will not be described in further details.

A handle **30** is further provided for attaching or mounting or securing or coupling to the piston rod **21** for actuating or operating the piston **20** to move along the chamber **11** of the housing **10** in a reciprocating action, and includes a bore or compartment **31** formed therein for slidably receiving or engaging with the second or outer end portion **23** of the piston rod **21**, and includes an anchoring member **32**, such as an inner peripheral flange **32** extended radially and inwardly into the compartment **31** from the middle or intermediate portion **33** thereof (FIGS. **9**, **11**) for selectively engaging with the shaft **25** and for guiding and limiting the piston rod **21** to slide or move relative to the housing **10**, and for preventing the shaft **25** from being disengaged or separated from the handle **30**, and for limiting the shaft **25** to slide or move in one half or one or first end portion **34** out of the two end portions **34**, **35** of the handle **30**.

For example, the handle **30** includes a tubular or cylindrical conduit or tube or barrel **36** formed or provided and extended into the one half or one or first end portion **34** of the handle **30** (FIGS. **7-12**), and includes a guiding passage or groove or channel **37** formed or provided in the barrel **36** for slidably receiving or engaging with the shaft **25** and for guiding and limiting the shaft **25** to slide or move in the barrel **36** and in the one half or one or first end portion **34** of the handle **30** (FIGS. **9-12**). A lid or cap or cover **38** may further be provided and attached to the one half or one or first end portion **34** of the handle **30** with a latch or threading engagement or adhesive material or fastener **39** for blocking or enclosing the one half or one or first end portion **34** of the handle **30** and for anchoring or retaining or confining or positioning the shaft **25** in the barrel **36** and in the one half or one or first end portion **34** of the handle **30**.

The handle **30** further includes a guiding channel or groove or passage **40** formed or provided in the other half or the other

or second end portion **35** and extended or opened or formed through the middle or intermediate portion **33** of the handle **30**, and includes a conduit or tube or barrel or stud **41** extended from the middle or intermediate portion **33** of the handle **30** and perpendicular to the handle **30** and having a channel or passage or groove or slot **42** formed or provided in the formed or provided in the stud **41** and communicating with the passage **40** for selectively receiving or engaging with the piston rod **21** and for allowing the piston rod **21** to be pivoted or rotated relative to handle **30** between an inwardly folding position where the piston rod **21** is received or engaged in the other half or the other or second end portion **35** of the handle **30**

(FIGS. **4-6** and **9-12**) and an outwardly working position where the piston rod **21** is received or engaged in the stud **41** and perpendicular to the handle **30** (FIGS. **1**, **3**, **7-8**).

A sleeve or tube or barrel or control ferrule **50** may further be provided and slidably attached or mounted or secured onto the piston rod **21** and includes another engaging member or outer thread or threaded segment **51** (FIGS. **2-3**, **7-12**) extended or formed or provided thereon for selectively threading or engaging with the engaging member or inner thread **18** of the cap **16** or of the housing **10** (FIGS. **9-12**) and for selectively anchoring or retaining or attaching or mounting or securing the control ferrule **50** to the housing **10** (FIGS. **4-5**); and includes a further engaging member or inner thread **52** formed or provided therein for selectively threading or engaging with a still further engaging member or outer thread **43** (FIGS. **7-8**) that is formed or provided on the stud **41** of the handle **30** (FIGS. **2**, **4-8**) and for selectively anchoring or retaining or attaching or mounting or securing the control ferrule **50** to the stud **41** of the handle **30** and thus for solidly and stably anchoring or retaining or securing the piston rod **21** to the handle **30** at the outwardly working position where the piston rod **21** is perpendicular to the handle **30**.

In operation, as shown in FIG. **1**, the foot stand **26** is foldable or collapsible relative to the housing **10** for selectively supporting the housing **10** in or at the upright status or working position, and also foldable or collapsible toward and to engage with the housing **10** in or at a compact folding structure or status or position (FIGS. **2-6**). As shown in FIGS. **1**, **3** and **7-8**, the handle **30** may be folded or rotated relative to the piston rod **21** to the outwardly working position where the handle **30** is perpendicular to the piston rod **21** for allowing the user to pump and to actuate or operate the piston **20** to move along the chamber **11** of the housing **10** in the reciprocating action in order to pump and to generate the pressurized air and to supply the pressurized air out through the outlet **12** of the housing **10** and then to the hose **27** and the nozzle **28**.

The control ferrule **50** may be threaded or meshed or engaged with the engaging member or outer thread **43** of the stud **41** of the handle **30** for securing the control ferrule **50** to the stud **41** of the handle **30** and thus for solidly and stably retaining the piston rod **21** to the handle **30** at the outwardly working position where the handle **30** is perpendicular to the piston rod **21**. It is to be noted that the shaft **25** and the second or outer end portion **23** of the piston rod **21** are located in the middle or intermediate portion **33** of the handle **30**, and the two halves or the two end portions **34**, **35** of the handle **30** are located at opposite or different sides of the piston rod **21** while in the outwardly working position such that the user may solidly and stably and suitably grasp the two halves or the two end portions **34**, **35** of the handle **30** in order to forcefully and effectively and suitably apply the force to actuate or operate the piston **20** to move along the chamber **11** of the housing **10** in the reciprocating action in order to pump and to generate the pressurized air.

When it is required to fold or collapse or store the handle **30** of the hand pump or air pump, the control ferrule **50** may first be unthreaded or disengaged from the stud **41** of the handle **30** and may be selectively attached or mounted or secured or coupled to the housing **10** by engaging the engaging member or outer thread or threaded segment **51** of the control ferrule **50** with the engaging member or inner thread **18** of the cap **16** or of the housing **10** (FIGS. **4-6**. **9-12**), at this moment, the piston rod **21** is released and may be pivoted or rotated relative to the handle **30** toward the inwardly folding position where the piston rod **21** is received or engaged in the other half or the other or second end portion **35** of the handle **30**, and the shaft **25** may then be moved along the guiding channel **37** of the barrel **36** of the handle **30** (FIGS. **9-10**), and the handle **30** may further be moved onto the housing **10** to the compact folding structure or position.

As shown in FIGS. **13-16**, an additional sleeve or barrel or shield or gasket **60** may further be provided and attached or mounted or secured onto the second or outer end portion **23** of the piston rod **21** and anchored or retained or secured to the piston rod **21** with the shaft **25**, and includes a still further engaging member or outer thread **61** formed or provided thereon for selectively threading or engaging with the inner thread **52** of the control ferrule **50** and for selectively anchoring or retaining or attaching or mounting or securing or locking the control ferrule **50** to the stud **411** of the handle **301** and thus for solidly and stably anchoring or retaining or securing the piston rod **21** to the handle **301** at the outwardly working position where the piston rod **21** is perpendicular to the handle **301**.

Alternatively, as shown in FIGS. **17-20**, the piston rod **211** further includes an orifice **29** formed therein, such as formed in the second or outer end portion **23** thereof for receiving or engaging with a lock or catch or pole or rod or pin **70**, and the handle **302** further includes an aperture **44** formed in the stud **412** thereof for selectively receiving or engaging with the lock pin **70**, and the control ferrule **501** further includes a cavity **54** for selectively receiving or engaging with the lock pin **70** and for selectively anchoring or retaining or attaching or mounting or securing the control ferrule **501** to the stud **412** of the handle **302** and thus for solidly and stably anchoring or retaining or securing the piston rod **211** to the handle **302** at the outwardly working position where the piston rod **211** is perpendicular to the handle **302**.

Accordingly, the hand pump or air pump in accordance with the present invention includes a handle foldable or collapsible between a compact folding structure and an opened working structure and arranged for allowing the handle to be solidly and stably and effectively actuated or operated by the user while in the opened working structure.

Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

I claim:

1. A hand pump comprising:

a housing including a chamber formed therein, and including an outlet provided therein,

a piston slidably received and engaged in said chamber of said housing and movable along said chamber of said housing in a reciprocating action in order to pump and generate a pressurized air and to supply the pressurized air out through said outlet of said housing,

a piston rod including an inner end portion attached to said piston for actuating said piston to move along said chamber of said housing in the reciprocating action, and including an outer end portion extendible out of said housing,

a handle including a compartment formed therein for slidably receiving and engaging with said outer end portion of said piston rod at an inwardly folding position, and including a middle portion and a first end portion and a second end portion, and including a guiding passage formed in said second end portion of said handle, and including a stud extended from said middle portion of said handle and perpendicular to said handle and having a slot formed in said stud and communicating with said passage of said handle for selectively receiving and engaging with said piston rod and for allowing said piston rod to be rotated relative to handle between the inwardly folding position where said piston rod is received and engaged in said second end portion of said handle and an outwardly working position where said piston rod is engaged in said stud and perpendicular to said handle, and a barrel formed and provided in said first end portion of said handle,

a shaft attached to said outer end portion of said piston rod,

said barrel including a guiding channel formed therein for slidably receiving and engaging with said shaft and for guiding and limiting said shaft to slide and move in said barrel and in said first end portion of said handle, and

a control ferrule slidably attached onto said piston rod for selectively engaging with said stud of said handle and for selectively anchoring and securing said piston rod to said housing at the outwardly working position.

2. The hand pump as claimed in claim **1**, wherein said handle includes a first engaging member formed and provided on said stud,and said control ferrule includes a second engaging member for selectively engaging with said first engaging member of said stud and for selectively anchoring and securing said control ferrule to said stud of said handle.

3. The hand pump as claimed in claim **2**, wherein said first engaging member of said stud is selected from an outer thread, and said second engaging member of said control ferrule is selected from an inner thread.

4. The hand pump as claimed in claim **1**, wherein said control ferrule includes a threaded segment for selectively attaching to said housing.

5. The hand pump as claimed in claim **4**, wherein said housing includes a cap attached to the housing for slidably receiving and engaging with said piston rod, and includes an engaging member formed and provided on said cap for selectively engaging with said threaded segment of said control ferrule.

6. The hand pump as claimed in claim **1**, wherein said handle includes an anchoring member extended into said compartment from said middle portion of said handle for selectively engaging with said shaft and for guiding and limiting said piston rod to slide relative to said housing and for preventing said shaft from being disengaged from said handle.

7. The hand pump as claimed in claim **6**, wherein said anchoring member of said handle is selected from an inner peripheral flange which is radially and inwardly extended into said compartment from said middle portion of said handle.

8. The hand pump as claimed in claim **1**, wherein said handle includes a cover attached to said first end portion of said handle for blocking said first end portion of said handle and for anchoring and confining said shaft in said first end portion of said handle.

* * * * *